

Antimicrobial Stewardship Program

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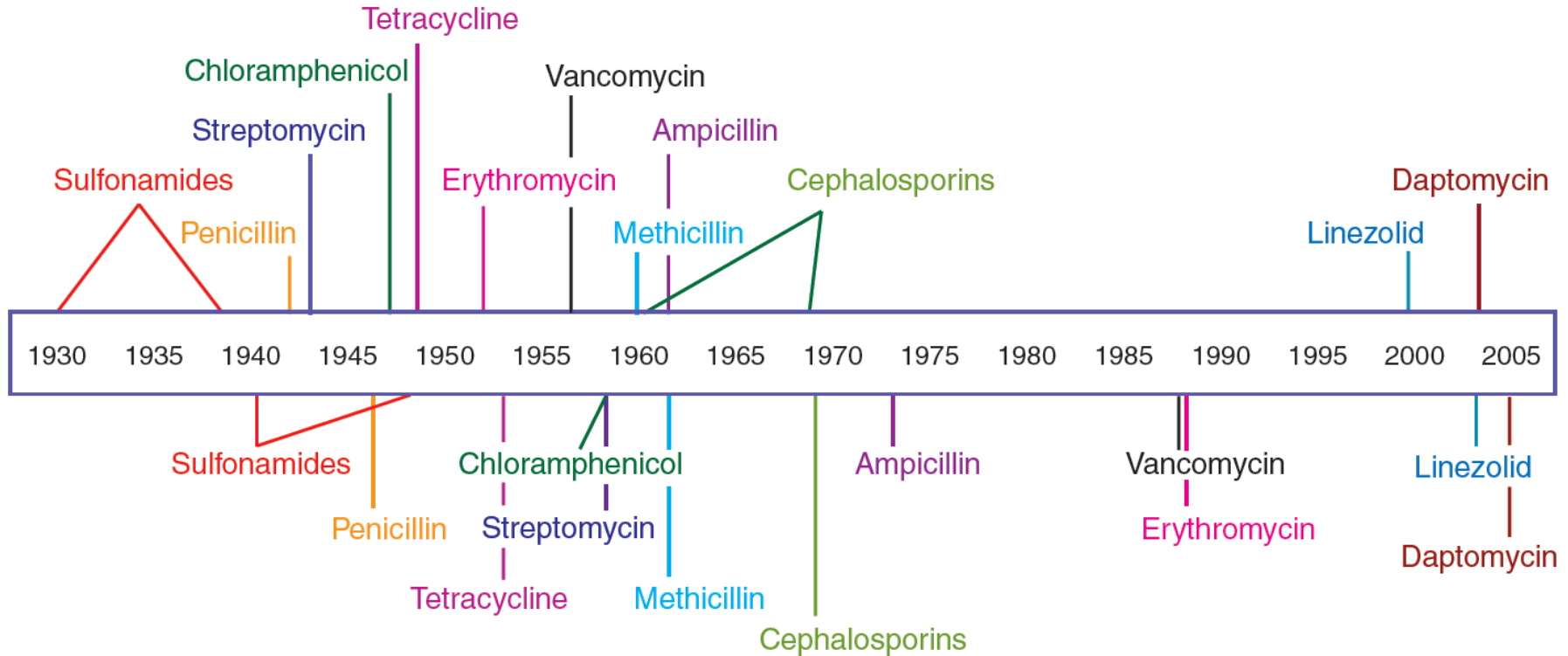


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Antibiotic Timeline

Antibiotic deployment



Antibiotic resistance observed

Clatworthy 2007

Antibiotic Use in Freestanding Children's Hospitals

- 37 hospitals: 556,692 discharges in 2008
- Among the hospitals large variability
 - 38-72% receive an antibiotic
 - 368-601 days per 1000 patient days
- Positive correlation with percent receiving an antibiotic and days of therapy
 - All antibiotics
 - Broad spectrum antibiotics

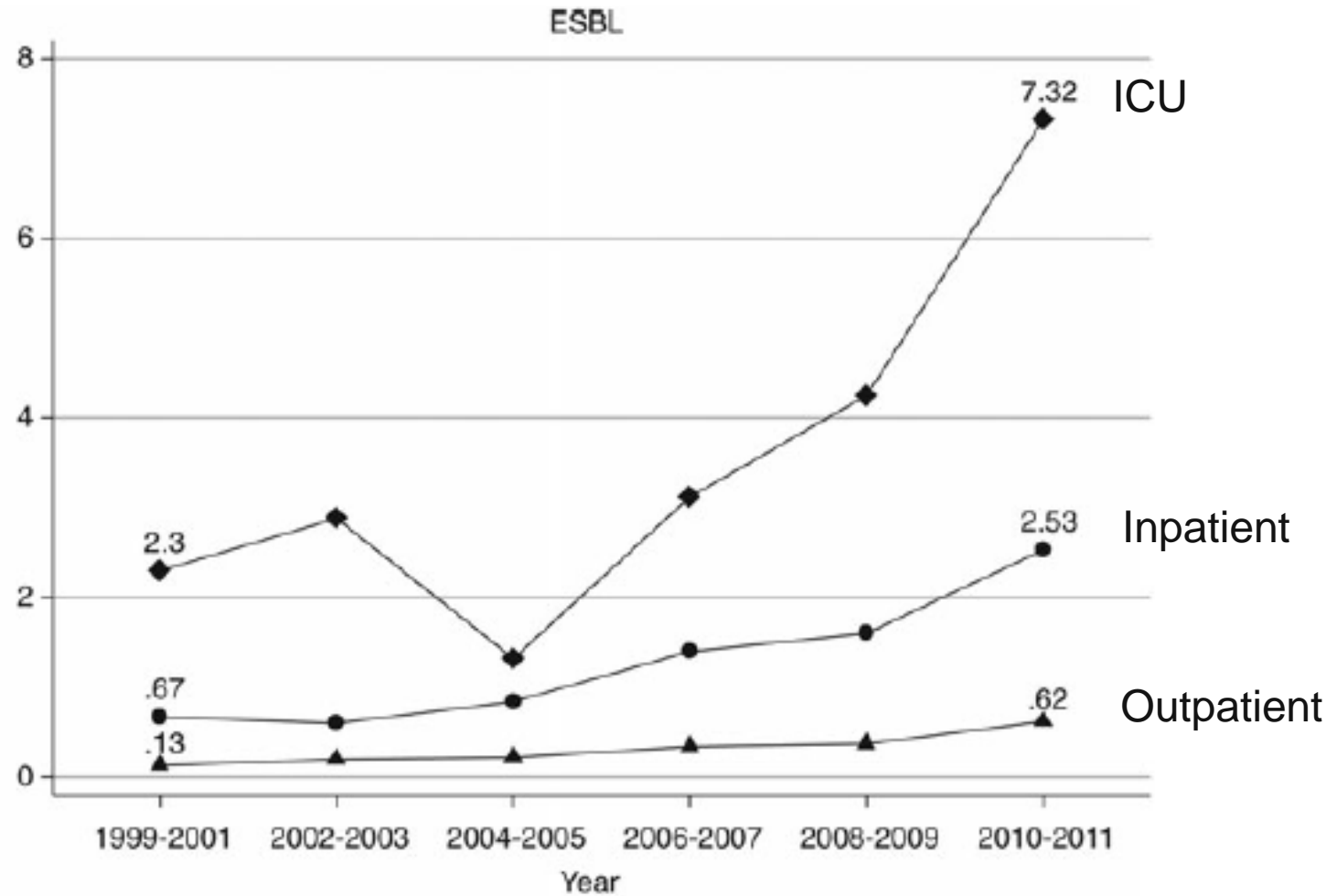
Gerber J et al., *Pediatrics* 2010; 126:1067

Appropriateness of Antibiotics

- 50% of antimicrobial use is either unnecessary or inappropriate
 - 30% of anti-anaerobic agents inappropriate
 - 50% of vancomycin use in adult populations is inappropriate
- 35% of initial vancomycin courses inappropriate in a pediatric institution

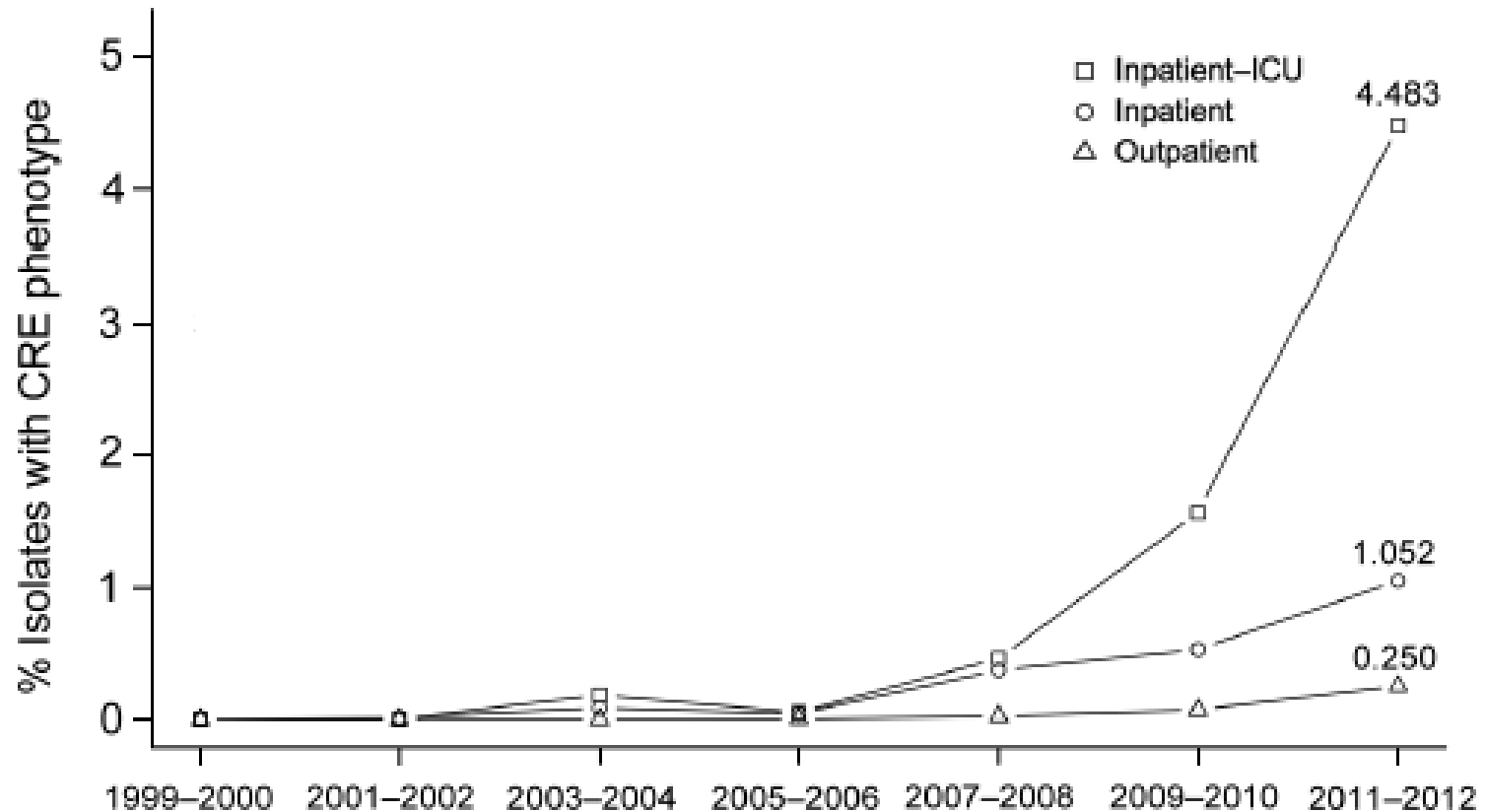
Donskey C et al. Arch Intern Med 2003
Bolon MK et al. ICHE 2005

Gram Negative Resistance in Children



Logan LK, JPIDS 2014; 3:320-8.

Carbapenem-Resistant *Enterobacteraceae* in Children



Logan LK, EID 2015; 21:2014

CDC Threat Report

- 23,000 Americans die annually from an antibiotic resistant infection
- 2 million Americans are infected annually with an antibiotic resistant infection
- 250,000 Americans suffer from *C. difficile* infection
 - 19,000 die from *C. difficile* infection

<http://www.cdc.gov/drugresistance/threat-report-2013/>

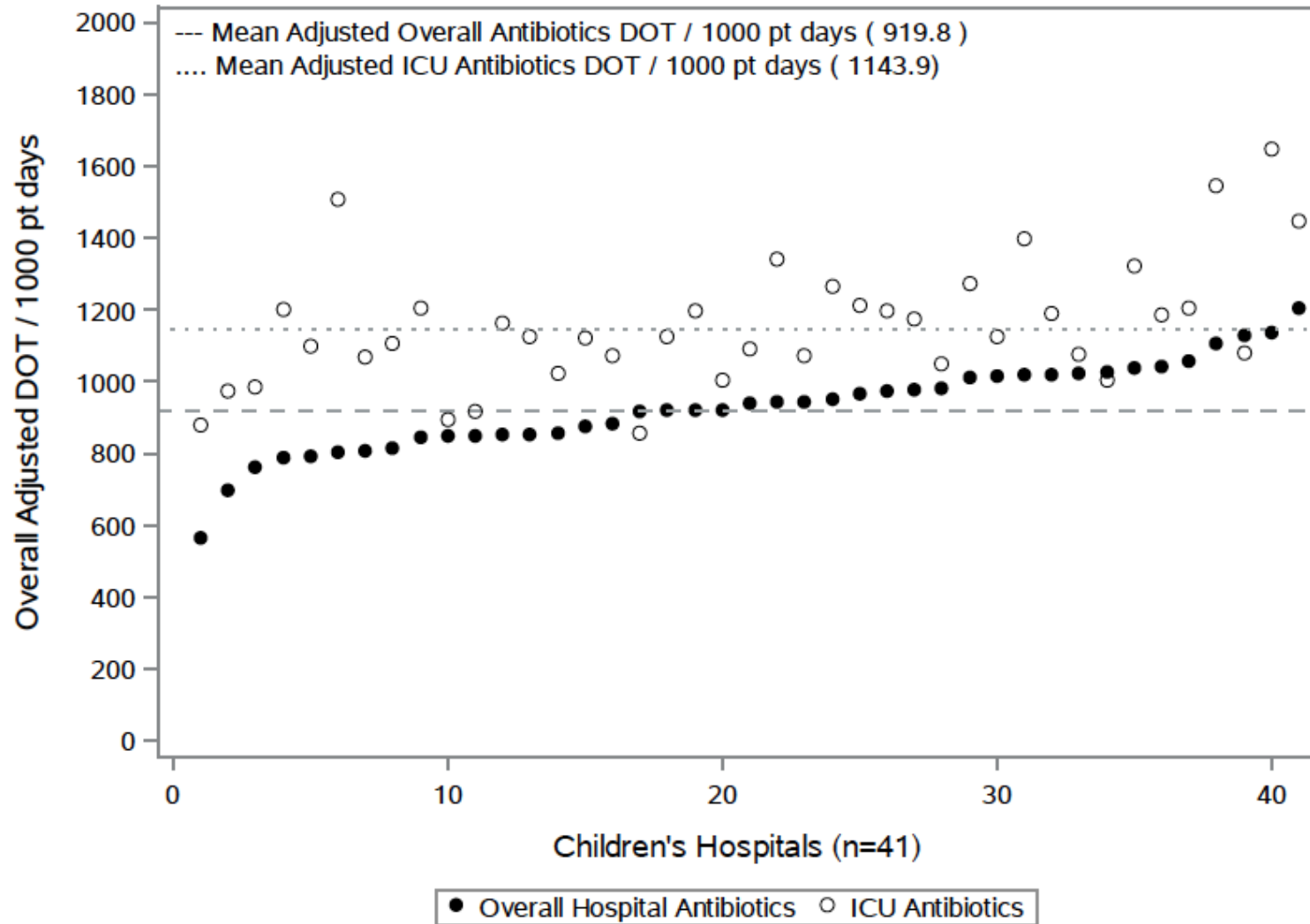
National Action Plan to Combat Antibiotic Resistant Bacteria

- Published March 2015
- Goal 1
 - All healthcare facilities will be required to have an antimicrobial stewardship program
 - Reduce inappropriate antimicrobial prescribing by 20% and outpatient by 50%

CDC 7 Core Elements for Antimicrobial Stewardship

- Leadership Commitment
- Accountability
- Drug Expertise
- Actions
- Tracking
- Reporting
- Education

Nationwide PICU Data



SLCH PICU Data

Generic Drug Code - Title	Hosp Total Patient Days	Peer Total Patient Days	Hosp Cases Rec'd Antibiotics	Peer Cases Rec'd Antibiotics	Hosp Days Rec'd Antibiotics	Peer Days Rec'd Antibiotics	Hosp DOT/ 1,000 pt days	Peer DOT/ 1,000 pt days
124133 - Vancomycin			428	15,315	2,350	79,618	169.10	112.95
122252 - Cefepime HCl			260	5,049	1,763	38,058	126.86	54.38
124451 - Sulfamethoxazole/trimeth			134	4,651	1,074	35,039	77.28	49.71
122109 - Cefazolin sodium			284	14,174	1,038	39,828	74.69	56.50
124118 - Meropenem			94	2,423	947	24,996	68.14	35.63
121265 - Piperacillin/tazobactam			105	5,580	701	37,625	50.44	53.38
122231 - Ceftriaxone sodium			172	13,750	476	51,696	34.25	73.34
121231 - Ampicillin sod/sulbactam			97	2,402	450	9,959	32.38	14.13
122211 - Cefotaxime sodium			96	3,297	401	15,232	28.86	21.61
123201 - Ciprofloxacin			41	1,797	359	12,383	25.83	17.57
124143 - Clindamycin			70	6,705	323	30,748	23.24	43.62
121225 - Ampicillin			61	4,300	309	18,379	22.24	26.07
121217 - Amoxicillin trihydrate			83	2,895	270	13,797	19.43	19.67

St. Louis Children's ASP

Mission/Goal

- To provide the best antimicrobial therapy (right dose, drug and duration) to patients that results in the best outcome with the least amount of toxicity and resistance.

Philosophy

- Communication and Collaboration

St. Louis Children's ASP

Core Team

- Pharmacist- Miranda Nelson
- ID physician- Jason Newland
- Clinical pharmacists
- Data analyst- Angela Niesen
- Infection prevention & Control- Ericka Hays
- Microbiology- Greg Storch, Carey-Ann Burnham

St. Louis Children's ASP

ASP strategies

- Prior-approval/restriction
- Prospective-audit with feedback
- Empiric antibiotic selection guideline
 - Embedded in order sets
- Clinical practice guideline(s)

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ASP strategies

- Prior-approval/restriction-
 - Ceftaroline, daptomycin, IV doxycycline, posaconazole, tigecycline, linezolid
 - ID consult required for antibiotic lock therapy, ceftolozane/tazobactam, ceftazidime/avibactam

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ASP strategies

- Prospective-audit with feedback
 - Tentatively will start mid August reviewing all antibiotics daily
 - Stewardship rounds
 - Want to be available for any questions or feedback on the program

St. Louis Children's ASP

ASP strategies

- Empiric antibiotic selection guideline for common infections
- Has been reviewed by PICU CLG- edits and additions have been added

Questions